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NATIONAL LUBRICATING & GREASE INSTITUTE

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Crankcase Oil Level Gages Used on 1940 Models*

MAKE AN INTERESTING STUDY

There are two general types of oil level gages or indicators used on current production of the various makes and models of automobile engines. The "dip-stick" type is most generally used, the "float" type being used on only the Cadillac V-16, the Lincoln Zephyr and the Nash Ambassador 8.

While all gages of the dip-stick type are similar in that they provide definite information to the car owner as to when oil is "low," the "safe driving range," etc., no two car manufacturers' markings are the same. Therefore, when all of these are assembled for comparison, they present an interesting study.

DIP-STICK TYPE

In checking the oil level with the dip-stick type of gage, the engine should be shut off and allowed to stand idle a few minutes to allow oil that has been in circulation to drain down into the crankcase pan. **IMPORTANT:** No reading on any type gage is accurate when the engine is running or just after it has stopped. When the engine is warm, the oil will run back to its normal level in less than a minute. If the engine is cold and the oil thick, it may take several minutes. The dip-stick is then removed and wiped with a clean rag, reinserted and again removed for a correct reading. If the dip-stick is allowed to cool for a minute or two the oil will leave a thicker film, making it easier to obtain a correct reading. Care should be taken not to over-fill, as excess oil is of no advantage. Any excess oil will be quickly consumed and give the effect of excessive oil consumption. Furthermore, over-filling usually results in smoky exhaust fumes.

With the exception of Cadillac V-8 and La Salle models, dip-stick type gages are made from round stock which has been flattened out at the lower end to size of $\frac{1}{4}$ in. to $\frac{3}{8}$ in. wide and approximately $\frac{1}{8}$ in. thick. The various markings on these are die-stamped into the flattened surfaces. The upper ends of these dip-sticks differ in design, each having its own peculiar shape for locating it in proper position in the oil filler tube.

The Cadillac V-8's and the La Salle use a flexible steel strip instead of a stick. Due to the shape of the oil filler tube used on these models, a straight dip-stick cannot be used.

The numbers or wording shown directly on the dip-sticks are stamped in the metal by the manufacturer. In cases where a " $\frac{1}{2}$ " mark or a " $\frac{1}{2}$ full" mark is shown stamped on dip-sticks, it indicates that when the oil level in the crankcase registers at this mark it contains one-half of the recommended oil capacity.

The "full" mark on all dip-sticks registers with the recommended crankcase capacity and, in servicing crankcases, the manufacturers' markings on the sticks should be carefully observed and followed.

A safe rule to follow is not to let the oil level fall below the "low," "add oil," "empty," or "refill" mark, and not to fill above the "full" mark.

FLOAT TYPES

While float type oil level gages are not used as extensively as dip-sticks, they provide the advantage of being able to check the oil level without removing and replacing a dip-stick. After the engine has remained

idle a few moments, the oil level can be checked at a glance.

The Cadillac V-16, Lincoln Zephyr and Nash Ambassador 8 have an oil level float within the crankcase to which a rod is attached, and on which an oil level indicator is provided at the top. The level of the oil is easily determined by looking at the indicator. Cars equipped with this type of gage have no crankcase dip-stick.

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Welcome

We welcome as Associate Member, Trabon Engineering Corporation, Cleveland, Ohio. Mr. E. J. Hull, President will represent Trabon.

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Selling Front Wheel Lubrication . . .

All automotive vehicles—passenger cars, commercial cars and trucks—require periodic front wheel bearing lubrication if they are to be operated safely and trouble-free. The Service Manager who makes this a part of his Guaranteed Lubrication operations will not only adequately serve all the needs

of his customers, but will find it highly profitable as well.

The step-by-step procedure, shown on these pages in picture form, is that usually followed in rendering front wheel bearing lubrication service. After a careful study of the detailed general instructions, follow

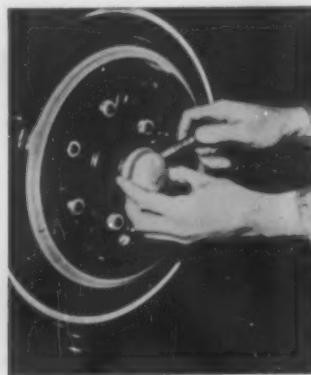
this procedure with full confidence, sell front wheel bearing lubrication to all your customers. Furthermore, the man who follows this procedure will know that he has done the job correctly.

Lubrication of front wheel bearings is a much neglected service; neglected through lack of knowledge of the proper application of lubricant, correct adjustment of bearings, and, principally, because of the station operator's desire to not engage in work of a mechanical nature. But lubrication service is not complete unless it does include the lubrication of front wheel bearings. The modern car requires perfect functioning of all parts and, in the interests of safety, front wheel bearings play a very important part. Lack of proper lubrication may cause bearings to break down or lock, and, with present-day high driving speeds, such failure may cause accidents and even death.

Front wheel lubrication service is not without a profit angle, for every year motorists spend in excess of 35 million dollars



1. Remove outer hub cap



2. Remove inner hub cap



3. Pull and destroy old cotter key



4. Remove spindle nut and lock washer



5. Remove outer bearing



6. Pull wheel. Use care to prevent damaging felt grease retainers.



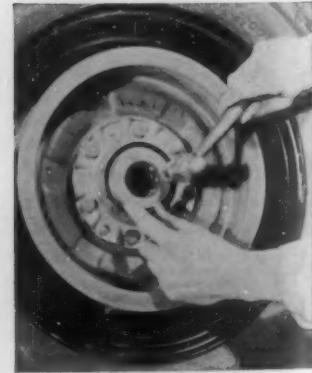
11. Wash all bearings thoroughly in kerosene



12. Blow bearings dry with compressed air



13. Work grease thoroughly into each bearing



14. Replace inner bearing, tap in felt grease retainer, replace wheel



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GEORGE W. MILLER . . . Editor
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for this job alone. Anyone who will equip himself with the proper tools and necessary information concerning the various types of front wheel bearings, may share in this "extra profit" service. By explaining to each customer the importance of front wheel lubrication, stressing the economy and safety angles especially, a volume of business can be built.

The lubricant used on front wheel bearings must lubricate over a long mileage period. It must stay in the bearings and not seep out onto the brake linings. This

latter requirement is of great importance, as over 70 per cent of brake troubles can be attributed to improper wheel bearing lubrication. When linings become grease-soaked, brakes will not equalize and "grabbing" will prevent emergency stops—may even cause accidents and loss of life. Brake linings cannot be cleaned, but must be replaced.

Wheel Bearing Grease should always be used, unless specifications call for another grade of lubricant.

Lubrication intervals vary from 5,000 to 10,000 miles, according to car manufacturers' recommendations. Perhaps the most important point in the service is that lubricant must be thoroughly worked into the bearing, not merely spread over the outside. Wheel hubs should never be packed with grease, as the proper amount of lubricant is contained in the bearing itself.

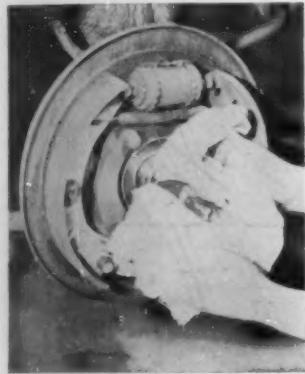
In the actual service operation, take time to service front wheel bearings without hurry—adjust bearings carefully. Do not attempt to make the tire valve stem stop at the bottom after spinning wheel; modern wheels are balanced and stem may come to

rest at any point. Do not mistake king pin play for loose wheel bearings. Never use an old cotter key—use a new one that fits snugly. Study information carefully when servicing an unfamiliar car model. Complete one wheel and check that assembly while pulling the second for service. Never use a screw driver or other metal tool to remove inner bearings; instead use a 10-inch piece of broomstick or other piece of wood. In washing bearings, examine carefully for flaws and defects.

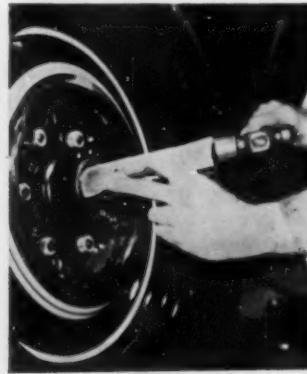
Don't pass up the "plus profits" in front wheel bearing lubrication service—your customers have to buy it somewhere.

Every automobile demands special attention at this season of the year. Light winter oils and greases should be drained and replaced with the heavier-bodied spring and summer lubricants. Chassis require lubrication. Radiators need draining and flushing after winter's rigors are past—batteries and tires need checking, perhaps replacement. Spring is the beginning of the out-of-doors season—now is the time to change—get your share of this PLUS PROFITS business!

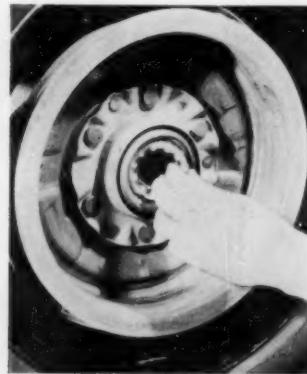
Courtesy of "The Diamond" of Mid-Continent Petroleum Corporation



7. Wash spindle with kerosene.
Caution: keep off brake lining



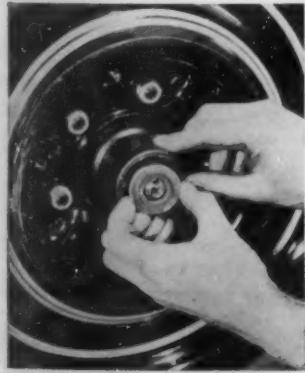
8. Remove felt grease retainer



9. Remove inner bearing from
car wheel



10. Wash hub with clean rag
and kerosene—semi-pack if
required



15. Replace packed outer bear-
ing and lock washer



16. Replace spindle nut and
adjust properly



17. Bend one leg of new cotter
key over spindle, the other leg
over nut



18. Replace inner and outer hub
caps to complete wheel
assembly

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Proper Servicing of Air Cleaners

The problem of crankcase ventilation was one which beset all designers of early gasoline engines.

The first attempt at crankcase ventilation was the construction of a "breather" which usually took the form of a standpipe fastened into the crankcase and covered by a loosely fitting cap for the intake and expulsion of air. This type of "breather" was continued for a few years, during which time cylinder reboring became quite common on all automobile engines to correct wear caused by (a) abrasives drawn into the engine through the carburetor, (b) abrasives taken into the crankcase through the "breather," (c) sludge and corrosive agents formed in the crankcase, causing poor lubrication and deterioration of parts.

AIR CLEANERS

The carburetor air cleaner was designed to overcome the intake of abrasive dust into the engine through the carburetor. There are two types of cleaners in general use today: (1) the oil dampened copper gauze cleaner for light duty where dust conditions are not severe and (2) the heavy duty oil bath cleaner having, in addition to the copper gauze, a quantity of oil that retains heavy dust particles and keeps the copper gauze moist and clean. The protection afforded by these filters against the intake of dust through the carburetor is greatly reduced unless the cleaners are serviced periodically.

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